

## ABSTRACT

A two-step via cleaning process which removes metal polymer and oxide polymer residues from a via with substantially no damage to the via or underlying structures on a semiconductor substrate. The via is formed through a dielectric layer and a barrier layer which are disposed over a metal-containing trace, pad, or other such circuitry, wherein the metal-containing trace, pad, or other circuitry is disposed on a semiconductor substrate. When such a via is formed, the sidewalls of the via are coated with a residue layer. The residue layer generally has a distinct oxide polymer component and a distinct metal polymer component. The two-step cleaning process comprises first subjecting the residue layer to a nitric acid dip which removes the metal polymer component to expose the oxide polymer component. The oxide polymer component is then subjected to a phosphoric acid dip which removes the oxide polymer component. The oxide polymer and metal polymer residues may also be removed during the fabrication of the via by removing them directly after their respective formations.

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